

Date: Thursday, 3/13/2008 1:02:12 PM
User: Kim Johnston

Process Sheet

13

Customer : CU-DAR001 Dart Helicopters Services Drawing Name : 407 HIGH AFT X-TUBE ASSEMBLY
Job Number : 38011
Estimate Number : 13208
P.O. Number :
This Issue : 3/13/2008 S.O. No. :
Prsht Rev. : NC Part Number : D407667205TRN
First Issue : / / Type : LANDING GEAR Drawing Number : D407-667-245 REV D
Previous Run : 38010 Project Number : N/A
Drawing Revision : D
Material :
Due Date : 3/28/2008 Qty: 1 Um: Each
Written By :
Checked & Approved By : JA 080313
Comment : Est Rev(A) 08-03-06 new issue DD verified by:ec

Additional Product

Job Number:



Seq. #: Machine Or Operation: Description :

1.0 D6011115 Crosstube Material



Comment: Qty.: 1.0000 Each(s)/Unit Total : 1.0000 Each(s)

Pick:

Qty Part number Description Batch

1 D6011-115 Crosstube B 34689

Check OD = 2.750"; ID = 1.450"

Q.m 08.04.16

2.0 MORI SEIKI MORI SEIKI CNC LATHE LARGE



Comment: MORI SEIKI CNC LATHE LARGE

1-Fill tube with sand & install plugs DT8531 on both ends as per Folio FA248

2-Turn first side as per Folio FA248

3-Deburr & Inspect for surface damage. Repair damage within limits as per Dwg D407-667-245. Q.m 08.04.17

3.0 QC1 INSPECT ALL DIM TO DIM SHEET



Comment: INSPECT ALL DIM TO DIM SHEET

Q.m 08.04.17

4.0 MORI SEIKI MORI SEIKI CNC LATHE LARGE



Comment: MORI SEIKI CNC LATHE LARGE

1-Turn second side as per Folio FA248

2-Deburr & Inspect for surface damage. Repair damage within limits as per Dwg D407-667-245

3-Remove sand and plugs

Q.m 08.04.17

| W/O: | | WORK ORDER CHANGES | | | | | |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE | By | Date | Qty | Approval Chief Eng / Prod Mgr | Approval QC Inspector |
| | | | | | | | |
| | | | | | | | |

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

QA: N/C Closed: _____ Date: _____

| NCR: | | WORK ORDER NON-CONFORMANCE (NCR) | | | | | | |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC Section A | Corrective Action Section B | | | Verification Section C | Approval Chief Eng | Approval QC Inspector |
| | | | Initial Chief Eng | Action Description Chief Eng | Sign & Date | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

NOTE: Date & initial all entries

Date: Thursday, 3/13/2008 1:02:12 PM
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Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: 407 HIGH AFT X-TUBE ASSEMBLY

Job Number: 38011

Part Number: D407667205TRN

Job Number:



Seq. #:

Machine Or Operation:

Description :

4-Scribe part # and batch # using vibrating stylus as per Dwg D407-667-245
Inside of Cuff(Donot engrave on outside of tube)

a.m 08.04.17 *⑩*

5.0

QC1

INSPECT ALL DIM TO DIM SHEET



Comment: INSPECT ALL DIM TO DIM SHEET

a.m 08.04.17 *⑩*

6.0

QC8

SECOND CHECK



Comment: SECOND CHECK

08/04/17 *(40)*

7.0

LANDING GEAR 1

LANDING GEAR RESOURCE 1



Comment: LANDING GEAR RESOURCE 1.

1-Polish entire outside surface of crosstube

EL 8-4-21

8.0

HAND FINISHING1

HAND FINISHING RESOURCE #1



Comment: HAND FINISHING RESOURCE #1

Chemical Conversion Coat as per QSI 005 4.1
Ensure no sand is in the tube before alodine.

EL 8-4-21

9.0

QC3

INSPECT POWDER COAT/CHEMICAL CONVERSION



Comment: INSPECT POWDER COAT/CHEMICAL CONVERSION

EL 08-04-21

10.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Identify and stock in kanban rack
Location: *Cross tubes*

EL 8-4-21

11.0

QC21

FINAL INSPECTION/W/O RELEASE



Comment: FINAL INSPECTION/W/O RELEASE

08/04/22

Job Completion



W 08/04/22

| W/O: | | WORK ORDER CHANGES | | | | | |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE | By | Date | Qty | Approval Chief Eng / Prod Mgr | Approval QC Inspector |
| | | | | | | | |
| | | | | | | | |

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

QA: N/C Closed: _____ Date: _____

| NCR: | | WORK ORDER NON-CONFORMANCE (NCR) | | | | | | |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC Section A | Corrective Action Section B | | | Verification Section C | Approval Chief Eng | Approval QC Inspector |
| | | | Initial Chief Eng | Action Description Chief Eng | Sign & Date | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

NOTE: Date & initial all entries

| | |
|---|----------------------------------|
| DART AEROSPACE LTD | Work Order: 38011 |
| Description: Crosstube Assembly | Part Number: D407-667-245 |
| Inspection Dwg: D407-667-245 Rev: D | Page 1 of 1 |

FIRST ARTICLE INSPECTION CHECKLIST

☒ First Article ☐ Prototype

| Inspection Sheet Drawing Dimension | Tolerance | Actual Dimension | Accept | Reject | Method of Inspection | Comments |
|---------------------------------------|-----------|---------------------|---------|--------|-------------------------|----------|
| SIDE A | 2.490 | +0.005/-0.000 | 2.493 | ✓ | | |
| | 1.832 | +0.005/-0.000 | 1.834 | ✓ | | |
| | 1.838 | +0.005/-0.000 | 1.842 | ✓ | | |
| | 1.892 | +0.005/-0.000 | 1.897 | ✓ | | |
| | 2.052 | +0.005/-0.000 | 2.056 | ✓ | | |
| | 2.206 | +0.005/-0.000 | 2.208 | ✓ | | |
| | 2.521 | +0.005/-0.000 | 2.526 | ✓ | | |
| | 2.633 | +0.005/-0.000 | 2.633 | ✓ | | |
| | 4.10 | +/-0.030 | 4.10 | | | |
| | 4.978 | +/-0.030 | 4.979 | ✓ | | |
| | 2.040 | +0.000/-0.010 | 2.040 | ✓ | | |
| | 0.125 | +/-0.010 | 0.125 | ✓ | | |
| | R0.063 | +/-0.010 | R0.063 | ✓ | | |
| | R0.500 | +/-0.010 | R0.500 | ✓ | | |
| SIDE B | 2.490 | +0.005/-0.000 | 2.492 | ✓ | | |
| | 1.832 | +0.005/-0.000 | 1.836 | ✓ | | |
| | 1.838 | +0.005/-0.000 | 1.843 | ✓ | | |
| | 1.892 | +0.005/-0.000 | 1.897 | ✓ | | |
| | 2.052 | +0.005/-0.000 | 2.057 | ✓ | | |
| | 2.206 | +0.005/-0.000 | 2.211 | ✓ | | |
| | 2.521 | +0.005/-0.000 | 2.524 | ✓ | | |
| | 2.633 | +0.005/-0.000 | 2.633 | ✓ | | |
| | 4.10 | +/-0.030 | 4.0 | ✓ | | |
| | 4.978 | +/-0.030 | 4.978 | ✓ | | |
| | 2.040 | +0.000/-0.010 | 2.040 | ✓ | | |
| | 0.125 | +/-0.010 | 0.125 | ✓ | | |
| | R0.063 | +/-0.010 | R0.063 | ✓ | | |
| | R0.500 | +/-0.010 | R0.500 | ✓ | | |
| | 112.91 | +/-0.020 | 112.930 | ✓ | | |

| | | | |
|--------------------------|--------------------------------|----------------------------|-----|
| Measured by: A.M. | Audited by: [Signature] | Prototype Approval: | N/A |
| Date: 08.04.17 | Date: 08/04/17 | Date: | N/A |

| Rev | Date | Change | Revised by | Approved |
|-----|----------|---------------------------------------|------------|-------------|
| A | 04.04.21 | New Issue (P/O D407-667-205) | KJ/RF | |
| B | 06.03.09 | Dwg Rev updated | KJ/JLM | |
| C | 06.03.30 | Tolerance revised for 4.978 dimension | KJ/JLM | |
| D | 07.02.19 | Dwg Rev updated | KJ/JLM | [Signature] |

DART

| | | | |
|-------------------------------|--------------------------------|--|------------------------|
| DESIGN <i>PH</i> | DRAWN BY <i>PH</i> | DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA | |
| CHECKED <i>[Signature]</i> | APPROVED <i>[Signature]</i> | DRAWING NO. D407-667-245 | REV. D SHEET 1 OF 3 |
| DATE 07.02.07 | | TITLE CROSSTUBE ASS'Y (407 HIGH AFT) | SCALE NTS |
| A | 02.05.13 | NEW ISSUE | |
| B | 03.05.21 | ADD CHAFING SHIELD | |
| C | 05.07.26 | ADD HOLES AND NUT PLATES FOR COMPATABILITY WITH BHT/AA SKIDTUBES | |
| D | 07.02.07 | ADD VIEW FOR OEM SKID HOLES, ROTATE ORIENTATION OF CLAMPS SECTION F-F, REMOVE -851 ABRASION STRIP, ADD MAGNOBOND 6398, ADD CUSHION | |

RELEASED

07.02.04

| Qty | Part Number | Description |
|-----|---------------|-----------------------------------|
| | | |
| X | D407-667-245 | CROSSTUBE ASSEMBLY (407 HIGH AFT) |
| | | |
| 1 | D6011-115 | CROSSTUBE |
| | | |
| 2 | D2856-400-773 | ABRASION STRIP |
| 2 | D2873-043 | NUT PLATE |
| 2 | D2873-045 | NUT PLATE |
| 1 | D2894-1 | SUPPORT |
| 2 | D3190-1 | CHAFING SHIELD |
| 2 | D3595-075-430 | RUBBER CUSHION |
| 14 | MS20601AD4W8 | RIVET (OR NAS9302B-4-8) |
| 4 | MS21920-22 | CLAMP |
| 2 | MS21920-25 | CLAMP (OR MS21920-24) |

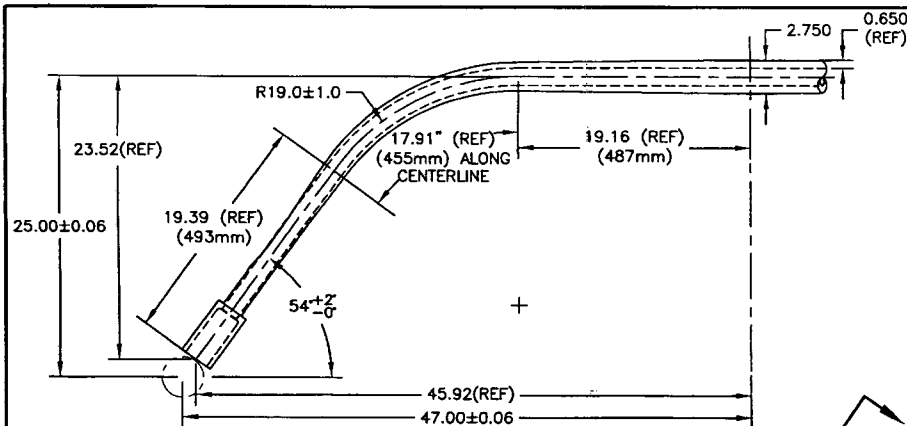
GENERAL NOTES:

- 1) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 2) MATERIAL: MANUFACTURED FROM D6011-115
FINISHED LENGTH = 112.91±0.020
- 3) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
PAINT OUTSIDE PER DART QSI 005 4.2
- 4) PART IS SYMMETRIC ABOUT CENTERLINE.
- 5) RUN-OFF PART. BLEND OUT EDGE LONGITUDINALLY, TRANSITION SHOULD BE SMOOTH.
- 6) BEND PROGRESSIVELY WITH A MINIMUM OF 6 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
- 7) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- 8) SCRIBE DART PART NUMBER AND BATCH NUMBER IN THIS AREA WITH VIBRATING STYLUS.
- 9) INSTALL D2856-400-773 ABRASION STRIP WITH A 0.13 (REF) GAP ON BOTTOM SIDE OF CROSSTUBE, PER QSI 035.
- 10) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 11) INSTALL D2894-1 CENTER SUPPORT USING A 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 12) INSTALL MS21920-25 CLAMPS WITH D3595-075-430 RUBBER CUSHIONS TO SECURE D2894-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMPS ARE OPPOSITE CROSSTUBE SUPPORT.
NOTE: MS21920-24 CLAMPS CAN BE USED TO ACCOMMODATE VARYING DIAMETERS. ENSURE THERE IS A MINIMUM OF 1.5 THREADS IN SAFETY ON THE NUTS.
- 13) TORQUE CLAMPS 80 TO 100 IN-LB.
- 14) INSTALL D3190-1 CHAFING SHIELDS SO THAT OVERLAP IS ON BOTTOM SIDE OF CROSSTUBE OPPOSITE D2894-1 SUPPORT.

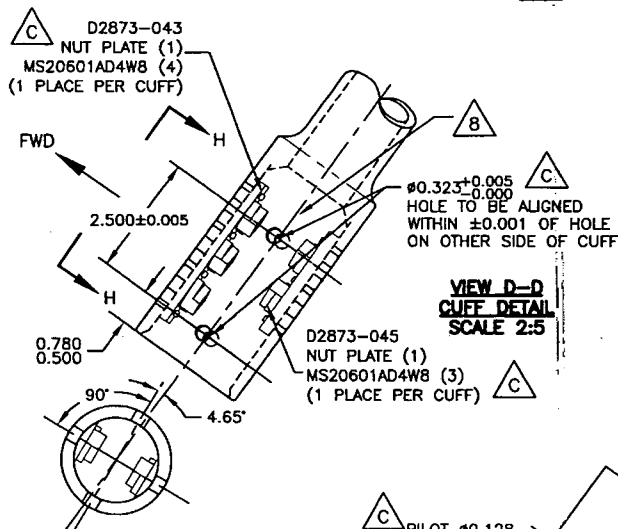
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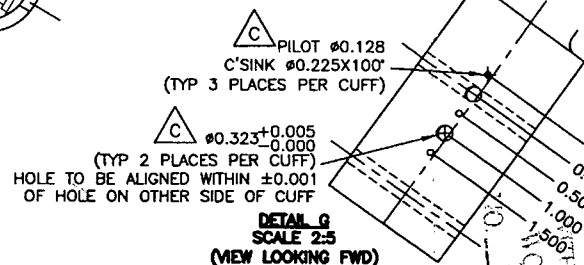
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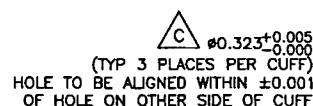
BENDING DETAIL 6



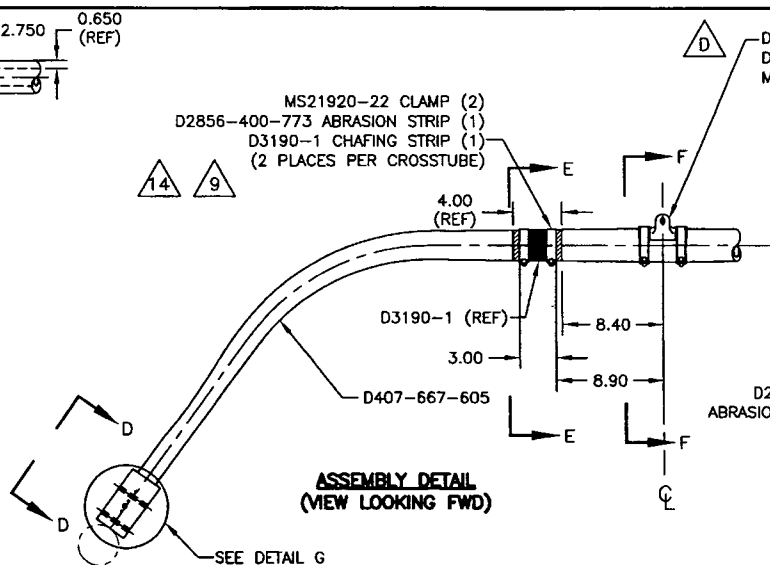
**VIEW D-D
CUFF DETAIL
SCALE 2:5**



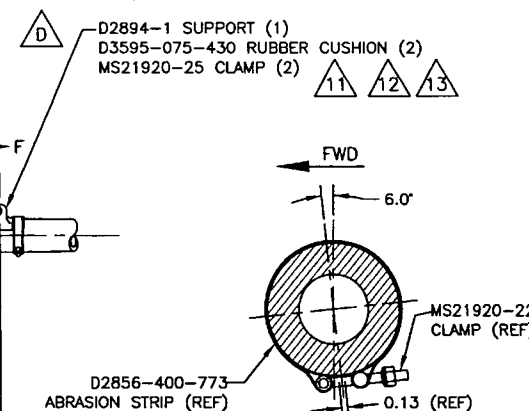
**DETAIL G
SCALE 2:5
(VIEW LOOKING FWD)**



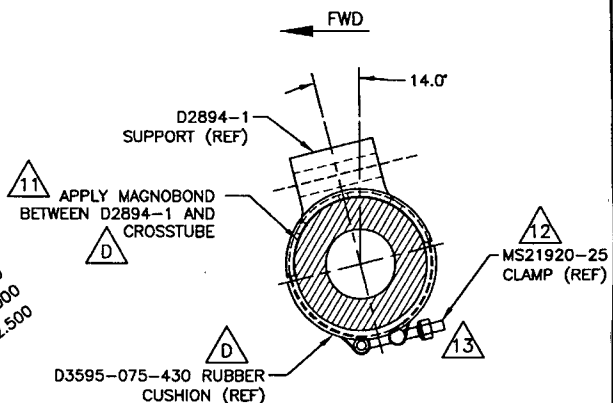
**VIEW H-H
SCALE 2:5
(VIEW LOOKING AFT, ROTATED)**



**ASSEMBLY DETAIL
(VIEW LOOKING FWD)**



**SECTION E-E
SCALE 2:5**



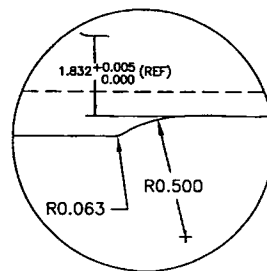
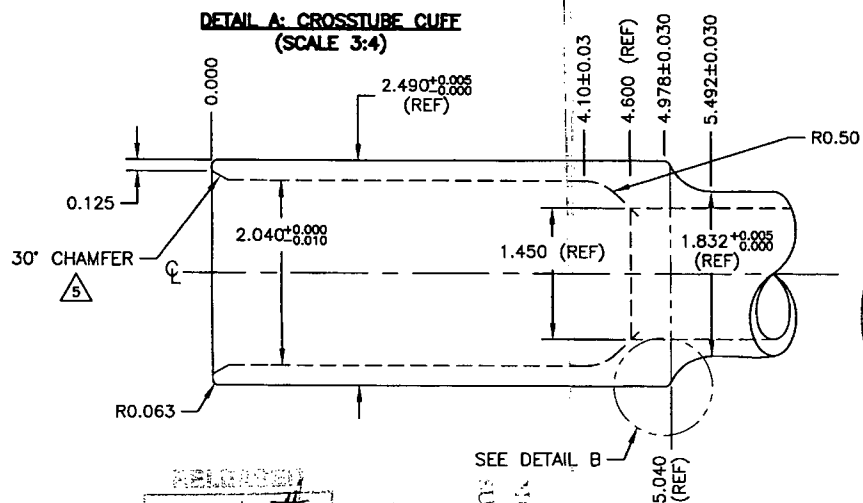
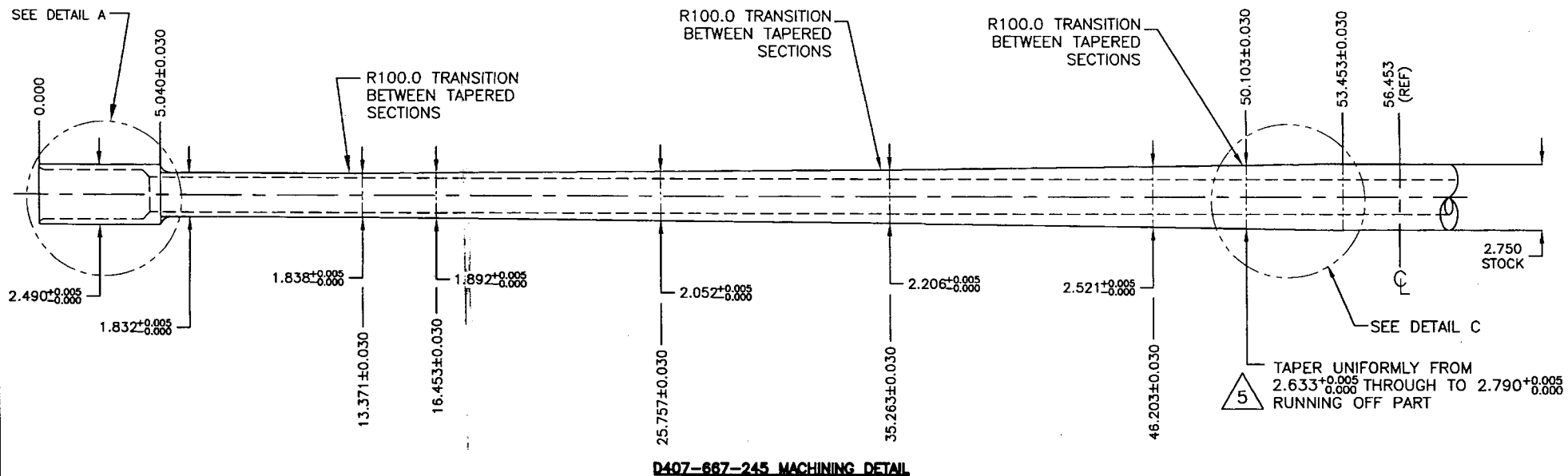
**SECTION F-F
SCALE 2:5**

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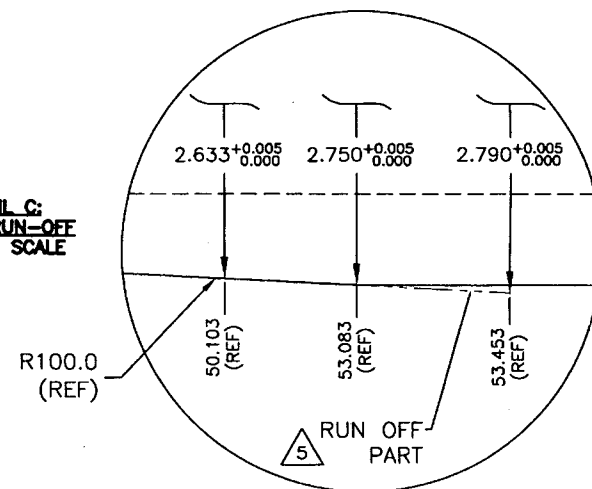
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| CHECKED | PH | APPROVED | PH | DRAWING NO. | REV. D |
| DATE | 07.02.07 | TITLE | CROSSTUBE ASS'Y (407 HIGH AFT) | D407-667-245 | SHEET 2 OF 3 |
| | | SCALE | 1:10 | | |

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DETAIL C: TAPER RUN-OFF
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| CHECKED | PH | APPROVED | PH | DRAWING NO. | D407-667-245 |
| DATE | 07.02.07 | TITLE | CROSSTUBE ASS'Y (407 HIGH AFT) | REV. D | SHEET 3 OF 3 |
| | | | | SCALE | 1:4 |

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